

Split-flow, Vertical Ammonia Converter

Abstract of Disclosure

A vertical, fixed-bed ammonia converter wherein a fixed-bed catalyst zone is configured into two mechanically separated catalyst volumes and two gas streams that operate in parallel. The design maintains the ratio of gas flow to catalyst volume so that there is no catalyst effectiveness penalty. The catalyst beds and gas flow paths are configured so that gas flow is downward through each catalyst volume. Each fixed-bed catalyst zone in the present invention can hold the catalyst in an annular space formed between two concentric shrouds arranged around a shell and tube heat exchanger. The two catalyst beds associated with each zone are situated above one another along the length of an interstage heat exchanger. Pipes or conduits are disposed through the beds to effect the parallel gas flow configuration, or alternatively, annular flows are created via passages through the internal shrouds that contain the catalyst beds.

Figures